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ABSTRACT

This document presents two kinds of data, gathered from several State reports, that pertain to higher education facilities. The first type of data reflects the standards and space utilization forecast used in planning higher education facilities; the second provides information about the utilization of existing facilities. Planning standards are reported for classroom, laboratory, library, and office space usage. Also included are explanations of the variables used in space utilization and planning. (Pages ii, 9 and 10 may reproduce poorly in hard copy because of marginal legibility.) (RA)

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NEW YORK STATE HIGHER EDUCATION

FACILITIES

COMPREHENSIVE PLANNING PROGRAM

PLANNING - INVENTORY - UTILIZATION
A 27 STATE SURVEY

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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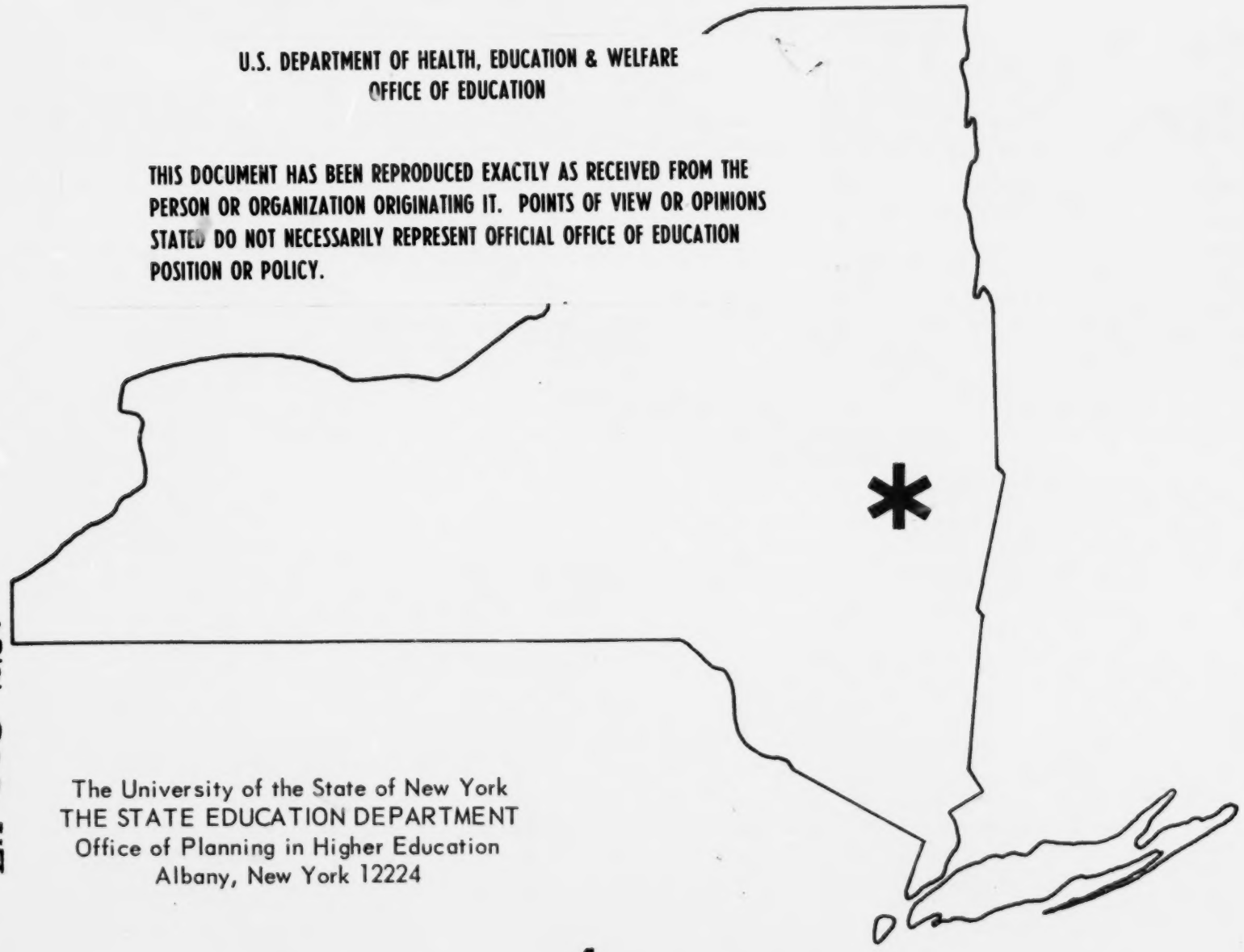

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PLANNING STANDARDS, INVENTORY, AND UTILIZATION DATA FOR HIGHER EDUCATION FACILITIES IN TWENTY-SEVEN STATES

Prepared by:

Bureau of Higher Education
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February 1970

FOREWORD

While engaged in formulating, conducting, and evaluating a statewide inventory of higher education facilities, the Bureau of Higher Education Facilities Comprehensive Planning watched with interest the inflow of information from other states. Reports describing methods and results in the activities of planning, inventorying, and evaluating utilization of higher education facilities were of greatest interest.

On two occasions data were extracted from the accumulated reports of other states and assembled for comparison of planning procedures and criteria. One such comparison was made early in 1969 by Leonard C. Romney and included data from six states. Soon after that Mr. Romney collaborated with Robert E. Ashley, a consultant to the Department, in a survey and comparison based on data from 16 states. This second comparison was issued in May 1969, to coincide with the interim report on progress of the New York State inventory of higher education facilities. Both of these comparisons were concerned only with standards and space factors used in planning methods by other states.

In the fall of 1969, Messrs. Romney and Ashley began extension of their earlier report to cover information from 27 states and to include data on inventory and utilization. Mr. Romney went to the staff of the Western Interstate Commission for Higher Education in November, and Mr. Ashley completed the report which follows.

William S. Fuller, Director
Higher Education Facilities Planning

TABLE OF CONTENTS

	Page
Foreword	ii
List of Tables	iv
General - Standards and Space Factors, Purpose and Scope, Discussion	1
Standards and Space Factors	5
Inventory and Utilization Data	12
Comparisons: Standards and Factors vs. Inventory and Utilization Data	14
Appendix A - Glossary of Terms	19
Appendix B - Tables of Data	20
Appendix C - Annotated Bibliography	64

LIST OF TABLES

Table		Page
1	General Comparison of Standards and Space Factors for Twenty-Seven States	20
2	General Comparison of Inventory and Utilization Data for Twenty-Seven States	21
3	Arkansas Space Standards and Factors	22
4	Arkansas Inventory and Utilization Data	23
5	California Space Standards and Factors	24
6	Colorado Space Standards and Factors	25
7	Colorado Inventory and Utilization Data	26
8	Connecticut Space Factors and Standards	27
9	Delaware Space Standards and Factors	28
10	Delaware Inventory and Utilization Data	29
11	Florida Space Standards and Factors	30
12	Florida Inventory and Utilization Data	31
13	Illinois Space Standards and Factors	32
14	Illinois Inventory and Utilization Data	33
15	Indiana Space Standards and Factors	34
16	Indiana Inventory and Utilization Data	35
17	Iowa State University Space Standards and Factors	38
18	Kansas Space Standards and Factors	39
19	Kansas Inventory and Utilization Data	39
20	Kentucky Space Standards and Factors	41
21	Kentucky Inventory and Utilization Data	42
22	Missouri Space Standards and Factors	43

LIST OF TABLES (cont'd.)

Table		Page
23	Missouri Inventory and Utilization Data	44
24	Montana Space Standards and Factors	45
25	Nebraska Space Standards and Factors	46
26	New Hampshire Inventory and Utilization Data	47
27	New Jersey Space Standards and Factors	48
28	New Jersey Inventory and Utilization Data	49
29	New York Inventory and Utilization Data	50
30	North Carolina Inventory and Utilization Data	51
31	Ohio Space Standards and Factors	52
32	Oklahoma Space Standards and Factors	53
33	Oklahoma Inventory and Utilization Data	54
34	Oregon Space Standards and Factors	55
35	South Carolina Space Standards and Factors	56
36	South Dakota Space Standards and Factors	57
37	South Dakota Inventory and Utilization Data	58
38	Texas Space Standards and Factors	59
39	Virginia Space Standards and Factors	60
40	West Virginia Space Standards and Utilization Data	61
41	Wisconsin Space Standards and Factors	62
42	Wisconsin Inventory and Utilization Data	63

GENERAL

The request by the United States Office of Education for each state to classify and inventory its higher education facilities produced various reactions. Some states were already well along in their independent efforts to develop inventory and utilization surveys and planning methods. They had only to continue their work, revising as necessary to conform to standard terminology and procedures set forth by the Office of Education. Other states suddenly became intensely introspective; at the same time there was a fair amount of covert and overt casting about to see what others were doing. This focus on higher education facilities and on the common problems of counting what existed, and planning what was needed, provoked the evolution of a systematic approach to planning complete with its own jargon.

In a greatly simplified description, the planning procedure for an institution starts with the acknowledgment of qualitative commitments by the institution in academic, social, and ancillary fields. These commitments define what the institution will become and cover such points as how big it will be, what it will teach, how it will teach, and how it will relate to its community and to other institutions. The commitments describe the character of the expanded and matured institution. Next, planners examine the qualitative commitments and translate them into physical needs. The statement of need lists the types of facilities the institution will require to meet its qualitative commitments. Finally, sizes and quantities of needed facilities are calculated using accepted standards and factors.

Standards and Space Factors

The word standard has many definitions; one from Webster's Seventh New Collegiate Dictionary which suits our purpose well is, "something established by authority, custom, or general consent as a model or example." By this definition, planning standards would be such items as the area per

student station, the area per faculty office, the student/faculty ratio, the area per reader in a library reading room, the number of hours each week a facility should be scheduled for use, and the percentage of student stations occupied during scheduled hours--to name a few.

Three of the standards cited as examples can be combined to compute a factor of great utility in calculating the amount of instructional space required for classrooms, teaching laboratories, and lecture rooms. Using the appropriate standard values for a specific purpose, the area per student station (NASF/Stn), the hours per week the facility is scheduled for use (Hrs/Wk), and the extent to which the provided stations are occupied during scheduled hours (% Stn Occup) can be arranged to indicate how much area the institution needs to present a base quantity of student-hours of instruction each week. The resulting factor is in units of net assignable square feet per weekly student hour. It is called the space factor and is expressed as:

$$\frac{\text{NASF}}{\text{WSH}} = \frac{\text{NASF/Stn}}{\text{Hrs/Wk} \times \% \text{ Stn Occup}}$$

Terms and abbreviations used in this report are defined in the glossary included in the appendix.

Purpose and Scope of Report

The purpose of this report is to present two types of data or information pertaining to higher education facilities, assembled from the reports and publications of several states. The two types are:

1. Standards and space factors used in planning higher education facilities.
2. Information concerning existing facilities, particularly the quantities of certain room types and some measure of their utilization.

In general we have tried to present recent data assembled through efforts of the states to produce inventory and utilization studies requested by the United States Office of Education. Thus, few of the source references report on studies made earlier than 1967. Exceptions are reports from Connecticut, Illinois, Nebraska, and Ohio. Their inclusion, we felt, enhanced the across-the-board sampling nature of this report.

Several comparisons may be based upon the assembled information. First, the standards and space factors used by a number of states for planning may be compared among themselves. Next, the situations of several states with regard to the existence and utilization of facilities may be compared. Further, comparisons may be drawn between the ideals represented by standards and space factors and the realities indicated by inventory and utilization data. Finally, the form and extent of inventory and utilization data reveal how differently various states have responded to the uniform guidelines for investigation and reporting suggested by the Office of Education.

The following list of states and the type of information presented for each are covered in this report:

	Planning Standards	Inventory Data	Utilization Data
1. Arkansas	X	X	X
2. California	X		
3. Colorado	X	X	
4. Connecticut	X		
5. Delaware	X	X	X
6. Florida	X	X	X
7. Illinois	X	X	X
8. Indiana	X	X	X
9. Iowa (State University)	X		

		Planning Standards	Inventory Data	Utilization Data
10.	Kansas	X	X	X
11.	Kentucky	X	X	X
12.	Missouri	X	X	
13.	Montana	X		
14.	Nebraska	X		
15.	New Hampshire		X	
16.	New Jersey	X	X	
17.	New York		X	
18.	North Carolina		X	X
19.	Ohio	X		
20.	Oklahoma	X	X	X
21.	Oregon	X		
22.	South Carolina	X		
23.	South Dakota	X	X	X
24.	Texas	X		
25.	Virginia	X		
26.	West Virginia	X	X	X
27.	Wisconsin	X	X	X

Discussion

Standards, space factors, and inventory and utilization data are discussed in three sections. First, a discussion of standards and space factors adopted by individual states compares these within their space categories rather than state-by-state. The standards and space factors may be regarded as guidelines for planning or ideal standards for the provision and use of various types of space. Inventory and utilization data are discussed in the

second section according to the types of space reported, showing what resources exist and how they are being used. Finally, ideals and actualities are compared so far as the availability and the form of data will permit.

The information presented state-by-state was selected from source references and arranged to permit as many direct comparisons as possible. In nearly all cases, the data shown for any one state are only a portion of the total data available for that state. The items were chosen because of common bases or like units which would facilitate comparisons. Wherever averages had been computed for groups of institutions by size or source of support, or--even better--on a statewide basis, these were selected in preference to numerous items for individual institutions. Where some states presented all the data necessary to compute space factors but had not computed them, the obvious computations were performed to simplify comparisons by reaching a common term. Single entries in tables 1 and 2 derived by computation from given data are identified by footnotes. Thus, data have been rearranged, or a second level derived by performing indicated computations with available data, but in no instance has a value been assumed for any item not supplied in order that a computation or derivation could be performed.

STANDARDS AND SPACE FACTORS

Almost all of the states included in this study have identified standards or space factors for one or more of the academic space types--classrooms, class laboratories, offices, and libraries. Among those reporting standards or factors there is general agreement regarding the type of planning guide to be used. Variations are apparent in the values of the standards and factors adopted by the various states. Available data have been assembled in Table 1, General Comparison of Standards and Space Factors for Twenty-Seven States and arranged

in parallel form, as far as possible, for direct visual comparison. Where further information or additional standards for other types of space were readily available and deemed pertinent to this study, they are shown in the tables of data by individual states.

Classrooms

Twenty-four of the 27 states surveyed indicate some standard or factor applicable to classroom space. Of these 24 states, 16 have adopted space factors computed from standards as described earlier in this report. One more state adopted the requisite standards but apparently did not compute space factors from them. Data from the other seven states appear fragmentary.

Among the 16 states reporting space factors, 11 show a single factor applicable to classrooms. Two states, Iowa and Kentucky, have adopted a range of factors that vary with different room capacities. Delaware, Florida, and Oklahoma set forth classroom space factors that vary with the size of the institution as measured by enrollment. South Dakota has adopted single values for Hrs/Wk and % Stn Occ, but has a range of values for NASF/Stn depending upon the type of seating in the classroom. The space factors range from 0.44 to 1.00 NASF/WSH.

Seven states exhibit different approaches to the problem of projecting facilities needs, particularly classroom space. Three states, Oregon, Virginia, and West Virginia, report standard values for Hrs/Wk and for % Stn Occ, but they do not indicate how these can be applied to project space requirements. Ohio indicates a single value for Hrs/Wk and a range of values for NASF/Stn varying as the size of the classroom varies. New Jersey reports various areas in net assignable square feet of classroom space per full-time student according to the type of institution and degree level. Connecticut reports only a gross area per student of instructional space; Kansas merely states a gross area of nonresidential space per student.

Of the standards comprising the space factor, there was least variation in the Hrs/Wk the space is scheduled. Seventeen states reported 30 Hrs/Wk and one each reported 31 and 34 Hrs/Wk, for an average value of 30 Hrs/Wk. Fifteen states indicated a standard value for the area per student station in classrooms. Ten states reported 15 net square feet, three reported 16 net square feet and one each reported 14 and 16.5 net square feet per student station. The average of these values is 15.2 NASF/Stn. Eighteen states show standard values for the percentage of student stations occupied when the classroom is scheduled for use. These values are: eight at 60 percent, four at 67 percent, two at 66 percent, one at 66.6 percent, one at 65 percent, one at 55 percent, and one at 50 percent, for an average value of 62 percent.

A composite classroom space factor computed from the three average values of standards would be 0.81 NASF/WSH. The significance of this composite value is doubtful; the average values of the standards used in its computation are derived from such different bases.

Class Laboratories

The same 24 states which reported standards applicable to classroom planning also set forth standards applying to class laboratories in varying degrees of specificity. The approach in each case was approximately the same as in the matter of classrooms.

Fifteen states listed space factors computed from standards. Two more states presented standards without computing space factors. The remaining seven states present data which appear incomplete for the purpose of projecting space requirements for class laboratories.

Among the class laboratory space factors for 17 states (15 reported and two derived), five show a single factor for blanket application to class laboratories, and a factor can be computed for a sixth. The others indicate that requirements for this type of space vary according to different influenc Six states showed ranges of space factors varying according to subject field. Actually, seven states can be considered as using this same approach since South Dakota presented a full set of standards, from which space factors may be computed easily, wherein the size of student station varies with the subject field. Another four states--California, Delaware, Kentucky, and Montana--suggest a further degree of complexity by presenting space factors that vary with both subject field and level of instruction.

The remaining seven states indicate standards more or less applicable to class laboratories. Ohio shows values for Hrs/Wk and NASF/Stn varying with subject field and level of instruction. New Jersey presents only NASF per full-time student varying with subject field and level of instruction. Oregon, Virginia, and West Virginia each report single values of Hrs/Wk and % Stn Occ for class laboratories. As noted before, Connecticut mentions only gross area of instructional space per student and Kansas merely gives a value of gross nonresidential area per student.

The states which acknowledge different space requirements according to subject field show no uniformity in identifying these fields. Some states, such as Delaware, recognize only three large fields--graduate including agriculture, undergraduate liberal arts, and technical. On the other hand, Illinois recognizes 68 different subject areas for individual standards applying to class laboratories.

The various space factors range in size from 1.25 to 11.52 NASF/WSH. The variation is almost entirely due to the different sizes of student stations for different subjects, there being little variation in the standards for Hrs/Wk and % Stn Occ. Generally, the smallest laboratories are in fine arts and accounting; the largest are in science and engineering.

Nineteen states have adopted standard values for the Hrs/Wk a class laboratory should be scheduled. There is little variation. The highest value was 25 Hrs/Wk, the lowest was 20 Hrs/Wk and the average is 21 Hrs/Wk.

Values for % Stn Occ were reported by 18 states ranging from 60 percent to 85 percent with an average value of 79 percent.

High and low values of NASF/Stn are given in table 1 to show the range of standards adopted by the various states. If only one value of NASF/Stn was reported, this was entered as a high value. Among the states, Illinois showed the widest range with a high of 250 NASF/Stn and a low of 30 NASF/Stn. Kentucky reported the narrowest range, a high of 60 NASF/Stn and a low of 35 NASF/Stn. Fifteen high values varied from 250 NASF/Stn to 30 NASF/Stn, the latter being the single value reported by Nebraska. The average high value is 104.2 NASF/Stn. Low values of NASF/Stn showed much less variation. Ten reported values ranged between 20 and 48 NASF/Stn averaging 33.7 NASF/Stn.

Laboratory space factors in NASF/WSH are shown in table 1 for 17 states, 11 showing both high and low values. The space factors for South Dakota and Wisconsin were computed from their reported planning standards. Predictably, the space factors for Illinois show the widest range, from a high value of 11.0 NASF/WSH to a low value of 1.56 NASF/WSH, while Kentucky shows the narrowest range, from 3.21 to 2.06 NASF/WSH. High values of the space factor ranged from Montana's 11.52 NASF/WSH, which could not be verified because NASF/Stn was not reported, down to 3.13 NASF/WSH for Arkansas. The average of 17 high space factors is 6.09 NASF/WSH. Eleven low values of the space factor range between 3.00 and 1.25 NASF/WSH with an average value of 2.08 NASF/WSH.

Composite laboratory space factors computed from the average values of the standards would be: high, 6.03 NASF/WSH, and low 2.03 NASF/WSH. Again, the significance of these composite space factors is very doubtful because they are the end result of much averaging.

Offices

Eighteen of the 27 states included in this survey reported some type of standard for projecting office area requirements. Eight of these offer a single value of net area per FTE faculty without mentioning whether this is recommended per office or per occupant of larger offices. One of the eight clearly shows an additional provision equal to 25 percent of total office area for service, clerical, and conference space. The other seven are not clear on this point. In this group of eight standards, the areas range from 110 to 160 NASF.

Five states have adopted a net area allowance per FTE faculty which is intended to include office space, service area, and conference area. Values of this type of standard range from 135 to 168 NASF.

Four states determine the amount of office space required on the basis of net assignable square feet per FTE student. Values for all four vary with the level of instruction. In one case there is further variation by size of institution. In another, the areas vary with the type of program offered, and a third suggests adding 25 percent for service space. The standard areas range from 5 to 20 NASF/FTE student at the undergraduate level in colleges and universities and up to 40 NASF/FTE student at the graduate level.

The last state, Iowa, specifies the size of office by eight steps of academic rank and by two academic levels, college level or department level. Areas range from 70 NASF for a graduate student to 150 NASF for a professor and 225 NASF for the administrative head of a college.

Libraries

Sixteen of the surveyed states have standards for library planning. Ten of the 16 states reported standards applicable to stack space, study space, and service space. Three states gave standards only for stack and study space, two more for study space alone, and one for stack space alone. Only three states gave any indication of a desired number of volumes related to institutional size or enrollment.

Standards for stack space, 14 in all, were uniformly in terms of net square feet per volume to be housed or the reciprocal, the number of volumes per square foot of stack space. Values ranged from 0.067 NASF/volume (15 volumes per net square foot) to 0.10 NASF/volume (10 volumes per net square foot).

Study or reader space standards reported by 15 states were all in units of net assignable square feet. Nine states expressed their standards as net area per FTE student. Five states expressed their standards as net areas for a percentage of the FTE enrollment. One state used net area per full-time student, and one used net area per station without indicating the basis for providing stations. Areas provided for a percentage of the FTE enrollment were in the range of 18 to 30 net square feet, and the stations were provided for either 20 or 25 percent of the enrollment. Areas provided per FTE enrollment ranged in size from 5 net square feet per lower division undergraduate to 10.2 net square feet, division not specified.

Ten states reported standards for library service areas. One state proposed the same standard as for office space, two states specified an area per library staff member, two more suggested a percentage of the study space, and five states expressed service area as a percentage of the total of stack and study space.

Library standards, as reported, are remarkably consistent in form and in value. Perhaps most noteworthy is the fact that some states which have adopted comprehensive standards and factors for all other types of space make no mention of libraries.

INVENTORY AND UTILIZATION DATA

Information regarding existing facilities and their utilization appears less complete and less uniform than information on planning standards. Only 17 of the 27 states presented any data on the facilities they presently have in use. Fifteen of these 17 states offered inventory data. Twelve states reported data on utilization, and 11 states showed both inventory and utilization data. Of the 17 states indicating some form of inventory or utilization data, 14 also reported standards or factors for planning or projecting space needs.

To facilitate comparisons, inventory data are presented only for the four types of space covered by standards and factors--classroom, class laboratory, office, and library. Utilization data were sought only for classrooms and class laboratories. There are no accepted units for measuring and comparing the utilization of offices and libraries. Six states either reported the amounts of each type of space in NASF/FTE student or supplied the elements from which these units could be computed. One state, Missouri, reported gross square feet per FTE student. Florida offered a statewide total of net assignable area and the percentage distribution to different types of space. Three states showed statewide totals of net assignable area in some or all of the four types of space. All that could be found for one state was the average student station size in class laboratories.

The utilization data from 10 states showed some combination of Hrs/Wk, % Stn Occ, NASF/Stn, or space factors to gauge the use of classroom and class laboratory space. In some instances data appeared in different units. Footnotes on table 2 identify the items derived from other data by computation.

Classrooms

The inventories of seven states showed classroom space ranging from 9.05 NASF to 15.1 NASF/FTE student. The average of these values is 12.2 NASF. Missouri reports 13.6 gross SF/FTE student. Florida reports 12.2 percent of its statewide total of assignable area as being in classrooms. Kentucky, New Hampshire, Oklahoma, South Dakota, and Wisconsin merely show a statewide total net area in classroom space. Those values are absolute and do not relate to other data at hand.

Values of Hrs/Wk and % Stn Occ are given in table 2 for seven states as indicators of classroom utilization. Two of these seven states also report an average value for the size of student station, making it possible to calculate space factors for classroom use. Two other states in that group of seven report classroom space factors without stating the values of NASF/Stn used in computation.

Delaware indicates classroom utilization using a space factor obtained by dividing the total net area of classroom space by the total number of weekly student contact hours. Kansas reports an average value of student station size and a classroom factor without giving any other data. North Carolina and Oklahoma state factors alone with no indication how they are computed.

Class Laboratories

Inventory information on class laboratories is available in the same form from the same states as is the classroom information. There is one additional item; Colorado lists an average value for the size of student station.

Utilization data for class laboratories closely parallel the data for classrooms except that there is no entry for Oklahoma, but one additional entry from Indiana indicates a value for the size of student station.

Offices

Seven states inventory their office space in terms of the area provided per FTE student. Six use net area figures, one a gross area. One state reports office space as net area per FTE occupant and one other as net area per FTE faculty. Florida indicates office space as a percentage of a statewide total net area. Two states report their total net areas of office space.

Libraries

Only 11 states offered any measure of their library space, and these reports tended to be vague. It is not clear whether study spaces are considered as separate or whether they are lumped in with library space. Six states report space per FTE student, five in net areas and one in gross area. Florida reports a percentage of its statewide total net area as being library space. Four states offer statewide total net library areas.

Other

The data from seven states include, directly or by derivation, an item listed in table 2 as the Comprehensive Unit Measure. This is the total area of nonresidential facilities per FTE student. Six of the values given are in net assignable square feet; the Missouri value is in gross square feet.

COMPARISONS: STANDARDS AND FACTORS VS. INVENTORY AND UTILIZATION DATA

Classrooms

Only one direct comparison may be made between standards and inventory. New Jersey is the only state using the same units of net assignable square feet per FTE student in both cases. New Jersey's average classroom standard of 12.3 NASF/FTE compares with its average inventory value of 9.9 NASF/FTE.

There is more to be seen when comparing classroom standards to utilization. Seven states report classroom space factors both for planning and as a measure of utilization. Theoretical and actual factors compare as follows:

	Planning Space Factor	Actual Space Factor (Statewide Average)
Arkansas	0.83	0.90
Delaware	1.00	1.008
Illinois	0.83	1.05
Indiana	1.00	1.02
Oklahoma	0.80	0.80
South Dakota	0.74	1.11
Wisconsin	0.82	0.84

Class Laboratories

Again, New Jersey is the only state whose standards are in the same units as the inventory data. This time, however, a direct comparison is not significant. The standards range from 5.2 to 46.9 NASF/FTE; the average inventory value of six institutions is 11.9 NASF/FTE. Better comparisons are available in Table 28, New Jersey Inventory and Utilization Data. The column headed Class Labs leads off with a value of 10.9 NASF/FTE, the standard for a 4-year college, program in education. Below that are the inventory values for six reporting institutions.

The available data in class laboratories suggest the same sort of comparison between theoretical and actual that was made for classrooms. Six states report class laboratory space factors for planning and for utilization; their comparison follows:

State	Planning Space Factor	Actual Space Factor (Statewide Average)
Arkansas	3.13	1.17
Delaware	4.5 - 3.0	5.13
Illinois	11.0 - 1.56	4.48
Indiana	4.5	5.12
South Dakota	7.85 - 1.57	4.18
Wisconsin	3.7	2.77

Offices

Although 18 states indicate standards for projecting office space requirements and 14 states report inventory data, direct comparison may be made in only three cases where standards and inventory are stated in comparable units. New Jersey lists 9.5 net square feet per FTE student as the standard for office space, while the New Jersey inventory shows office area amounting to 7.7 net square feet per FTE student. South Dakota proposes 120 net square feet of office space per FTE faculty and reports having 118.1 NASF on the same basis; Illinois proposes 135 net square feet per FTE faculty and reports 146 net square feet on inventory.

No relation of standard to utilization can be developed, there being no measure of the utilization of offices.

Libraries

Library data afford only three direct comparisons although there are 16 standards proposed and 11 inventory entries. Illinois, Indiana, and New Jersey list planning standards and inventory quantities in net square feet of study space per FTE student as shown below:

State	Standard NASF/FTE	Inventory NASF/FTE
Illinois	7	5.1
Indiana	7	12.0
New Jersey	11.0	7.5

Missouri proposes 8.33 net square feet of study space per FTE student as a library planning standard. In its inventory Missouri lists 11.5 gross square feet per FTE student. On the assumption that the ratio of net to gross area is 0.6, the inventory quantity would be approximately 6.9 net square feet to compare to the standard of 8.33 net square feet.

Other Factors

Among other inventory data, six states listed values of net assignable area of nonresidential space per FTE student, and one state used gross area. Of these, only Kansas had proposed a value for net assignable nonresidential area per student as a standard. The comparison is 105 NASF/FTE student as a standard versus 97.65 NASF/FTE student reported in inventory.

In addition to the four major types of space featured in this report, the United States Office of Education lists five other types--special use, general use, supporting, medical care, and residential. Among the 27 state reports surveyed, there is random acknowledgment of these other types of space. Some states propose standards and factors to project the needs for these other types of space; some states include inventory information on these other types. Being primarily concerned with classrooms, class laboratories, offices, and libraries in this report, we have made no special effort to retrieve and report data on these other kinds of space and have done so only when it appeared conveniently with the data we sought.

Summary and Conclusion

Tables 1 and 2, following, summarize standards and space factors, inventory and utilization data from the reports of 27 states. State-by-state data backing up the entries in tables 1 and 2 are given in the individual state tables, numbers 3 to 42, inclusive.

An overview of the summary tables suggests an emergent uniformity regarding the needs, the units, and the values of standards and factors for projecting space requirements. There is less uniformity in the manner of tallying existing facilities or evaluating their utilization, and such uniformity as may be found here is expressed in units different from those used for standards and factors. The opportunities for direct comparison between ideal and actual are too few to establish any significant relation.

APPENDIX A

GLOSSARY OF TERMS

GSF — Gross Square Feet. The total floor area of a facility computed from its outside dimensions and including wall thicknesses, columns, circulation space, service and maintenance areas, equipment rooms, etc.

NASF — Net Assignable Square Feet (sometimes stated merely as ASF, omitting word Net). The net area within a facility which can actually be occupied and used for specified purposes, such as the area of a classroom, office, or laboratory computed from wall-to-wall dimensions.

FTE — Full-Time Equivalent. A theoretical number of full-time students or faculty having the same need for space as does the actual total faculty and enrollment of full-time, part-time, evening, nonmatriculated, and graduate students. One method of calculating FTE students is to divide the total credit hours of instruction presented by an institution by the number of credit hours in a normal full-time student load. FTE faculty may be computed by dividing total credit hours by the number of credit hours in a normal teaching load. (New York computes FTE students as the sum of full-time students plus one-third of the part-time students.)

Stn — Student Station. The place taken by a student using a facility for its intended purpose during scheduled use time.

NASF/Stn — Net Assignable Square Feet per Student Station. The number of square feet per seat or work space calculated by dividing the total net area of the space by the number of stations located therein.

WSH — Weekly Student Hours (or clock hours). The amount of time in hours students occupy a room each week for the scheduled activities required by the courses offered.

% Stn Occ — Occupancy Factor. The percentage of student stations that are occupied within a particular room or space when that space is scheduled for use. Sometimes stated as percent utilization.

Hrs/Wk — Hours per Week. The number of hours each week that a particular type of space is scheduled.

NASF/WSH — Net Assignable Square Feet per Weekly Student Hour. The amount of net space required to accomplish 1 student hour of instruction in a week. Frequently referred to as the space factor.

NASF/FTE — Net Assignable Square Feet per Full-Time Equivalent. The amount of space needed by each full-time equivalent student or staff who occupies the space.

NASF/Vol — Net Assignable Square Feet per Volume. The space required to accommodate one volume, usually bound, or its equivalent.

APPENDIX B

Table 1: GENERAL COMPARISON OF STANDARDS AND SPACE FACTORS FOR TWENTY-SEVEN STATES

	Classrooms					Laboratories						Offices		Libraries			
	Hrs Wk	%Stn Occ	NASF Stn	NASF/WSH High	NASF/WSH Low	Hrs Wk	%Stn Occ	NASF/Stn High	NASF/Stn Low	NASF/WSH High	NASF/WSH Low	NASF FTE Fac	Other	Stack NASF/Vol	Study Space NASF/Stn	Study Space % of Stu	Service
Arkansas	30	60	15	0.83	-	20	80	50	-	3.13	-	130	-	0.1-.07	-	-	-
California	34	66	15	0.67	-	25	85	200	30	9.40	1.40	130	-	0.1	25	20	140 ASF-FTE staff
Colorado	30	67	16	0.80	-	20	80	70.1	47	5.84	2.94	168 incl svc conf		0.083	5 to 6.5/FTE student		25% of stack, reader
Connecticut	(147 gross square feet nonresidential space per student; 98 gross square feet instructional space)																
Delaware	-	-	-	1.00	0.67	-	-	-	-	4.50	3.00	140 incl svc,conf		0.10	20	25	Same as office
Florida	30	60	16	0.89	-	20	80	55	-	3.43	-	(13.7 per FTE enroll)		-	(10.2 ASF/FTE student)		-
Illinois	30	60	15	0.83	-	20	80	250	30	11.00	1.56	135	-	0.10	(15 ASF/Fac; 7 ASF/Stu)		25% of study
Indiana	30	50	15	1.00	-	20	75	67.4	-	4.50	-	140	-	0.10	(7 ASF/FTE stu)		32% of study
Iowa (St.U.)	30	60	14	1.00	0.56	20	80	120	20	7.50	1.25	150	-	0.10	30	25	19% of total library
Kansas	(105 NASF/FTE student for six state schools)																
Kentucky	31	66	15	0.83	0.44	22	85	60	35	3.21	2.06	(14-40 ASF/FTE stu)		-	-	-	-
Missouri	-	-	-	0.83	-	-	-	-	-	3.75	-	125	25% Svc	0.067	(8.33 ASF/FTE stu)		25% of study and stack
Montana	30	60	-	0.83	-	20	80	-	-	11.52	2.19	160	-	0.10	(ASF/FTE stu, 5 low div, 7 up div, 9 grad)		
Nebraska	30	65	15	0.77	-	20	80	30	-	1.88	-	-	-	-	-	-	-
N. Hampshire	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
New Jersey	(12.3 NASF/FTE)					(5.2-46.9 NASF/FTE)						(9.5/FTE stu)	(3.7/FTE stu)	(11.0 NASF/FTE stu)			(36-54 NASF/FTE)
New York	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Carolina	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ohio	30	-	15	-	-	20	-	75	35	-	-	110	150, dep hd	0.08	25	-	-
Oklahoma	30	67	16	0.80	-	24	80	144	48	7.50	2.50	(5 NASF/FTE)	25% of tot	0.067	(6.25 NASF/FTE stu)		25% of study and stack
Oregon	30	60	-	-	-	20	80	-	-	-	-	-	-	-	-	-	-
S. Carolina	30	60	15	0.83	-	20	80	160	32	10.00	2.00	140	150 (admin)	0.083	(6.25 NASF/FTE stu)		20% of study and stack
S. Dakota	30	67	15	0.74[1]	-	24	80	150	30	7.85[1]	1.57[1]	120	-	0.083	25	20	-
Texas	30	55	15	0.90	-	20	60	60	30	4.80	2.40	140	120/gr asst	-	-	-	-
Virginia	30	60	-	-	-	20	80	-	-	-	-	-	-	-	-	-	-
W. Virginia	30	66.6	-	-	-	20	80	-	-	-	-	-	-	-	-	-	-
Wisconsin	30	67	16.5	0.82	-	24	80	71.5	-	3.70[1]	-	135	-	0.10	25	20	135 NASF/FTE staff

[1]Derived from data

Table 2: GENERAL COMPARISON OF INVENTORY AND UTILIZATION DATA FOR TWENTY-SEVEN STATES

	Inventory					Utilization							
						Classroom				Laboratory			
	Classroom NASF	Class Lab NASF	Office NASF	Library NASF	Compr Unit Meas[1] NASF/FTE	Hr/Wk	% Occ	NASF/Stn	Factor	Hr/Wk	% Occ	NASF/Stn	Factor
Arkansas	15.1/FTE	12.2/FTE	7.1/FTE	-	90.8	24.0	61.8	-	0.90	13.3	71.4	-	1.17
California	-	-	-	-	-	-	-	-	-	-	-	-	-
Colorado	-	45/Stn	-	-	-	-	-	-	-	-	-	-	-
Connecticut	-	-	-	-	-	-	-	-	-	-	-	-	-
Delaware	13.2/FTE	39/FTE	24.8/FTE	-	138.05	(153,688 NASF/152,511 WSH = 1.008)				(179,880 NASF/35,027 WSH = 5.13)			
Florida	(12.2%	20.3%	16.4%	8.8%	Total NASF) 19,054,376)	21.9	57.9	-	-	9.1	59.9	-	-
Illinois	16.5/FTE	13.7/FTE	146/FTE fac	5.1/FTE	-	23.5	57.0	16.3	1.05	16.6	4.3	47.8	4.48
Indiana	13.1/FTE	28.3/FTE	22.2/FTE	12.0/FTE	117.9	23.9	56	-	1.02	17.5	64	35.9	5.12
Iowa (St. U.)	-	-	-	-	-	-	-	-	-	-	-	-	-
Kansas	9.05/FTE	16.28/FTE	19.30/FTE	8.59/FTE	97.65	-	-	14.49	0.74	-	-	43.66	2.94
Kentucky	1,196,545	1,470,804	1,540,958	925,254	Total NASF	[2]24.2	29	-	-	[2]14.08	19	-	-
Missouri	*13.6/FTE	*22.7/FTE	*18.3/FTE	*11.5/FTE	*193.9	(*These are gross area per FTE student.)						-	-
Montana	-	-	-	-	-	-	-	-	-	-	-	-	-
Nebraska	-	-	-	-	-	-	-	-	-	-	-	-	-
N. Hampshire	522,679	[2]637,639	290,179	324,899	Total NASF	-	-	-	-	-	-	-	-
New Jersey[2]	[2]9.9/FTE	[2]11.9/FTE	[2]7.7/FTE	[2]7.5/FTE	[2]73.2	-	-	-	-	-	-	-	-
New York[3]	[3]14.4/FTE	[3]36.3/FTE	[3]31.6/FTE	[3]12.1/FTE	-	-	-	-	-	-	-	-	-
N. Carolina	-	-	-	-	120	-	-	-	1.20	-	-	-	7.03
Ohio	-	-	-	-	-	-	-	-	-	-	-	-	-
Oklahoma	642,156	805,803	464,520	520,932	-	-	-	-	0.80	-	-	-	-
Oregon	-	-	-	-	-	-	-	-	-	-	-	-	-
S. Carolina	-	-	-	-	-	-	-	-	-	-	-	-	-
S. Dakota	296,106	373,330	118.1/FTE Occ	-	-	23.2	56.9	14.7	[2]1.11	12.8	71.1	38.1	[2]4.18
Texas	-	-	-	-	-	-	-	-	-	-	-	-	-
Virginia	-	-	-	-	-	-	-	-	-	-	-	-	-
W. Virginia	-	-	-	-	-	[2]24	[2]65.9	-	-	[2]16	[2]76.4	-	-
Wisconsin	485,446	632,649	899,752	414,526	-	-	-	-	0.84	-	-	-	2.77

[1]Nonresidential net assignable square feet per FTE student.
[2]Derived from data.
[3]Derived from data for 4-year and graduate institutions only.

Table 3: ARKANSAS SPACE STANDARDS AND FACTORS

	Room Type	Range	Hrs per Wk	% Stn Occ	NASF per Stn	NASF per WSH	NASF per FTE Stu
1.	Classrooms	-	30	60	15	0.83	-
2.	Teaching laboratories	-	20	80	50	3.13	-
3.	Research space		1 sq. ft. per FTE undergrad. 65 sq. ft. per FTE masters 820 sq. ft. per FTE doctoral				
4.	Faculty offices		130 NASF per FTE faculty				
5.	Library		25,000 vol. for first 600 FTE students + 8,000 vol. for each additional 200 FTE students 0.1 sq. ft. per vol. for first 150,000 vols. 0.09 sq. ft. per vol. for next 150,000 vols. 0.08 sq. ft. per vol. for next 300,000 vols. 0.07 sq. ft. per vol. for all additional vols.				
6.	Ratio NASF/GSF = 0.7						
7.	Cost factor = $29.00 per GSF						
8.	Other standards for student health, lounge, recreation, and dormitory facilities						

Table 4: ARKANSAS INVENTORY AND UTILIZATION DATA, 1968

NASF/FTE Student by Room Type and Institutional Control

Room Type	Public Col and Univ	Public Comm Col	Private	Statewide Average
Classrooms	13.4	25.9	19.5	15.1
Teaching laboratories	11.1	29.0	13.3	12.2
Phys. ed. labs.	5.0	13.6	12.7	6.9
Faculty offices	6.9	5.0	8.1	7.1
Other instr. space	12.3	10.3	22.2	14.4
Total instr. space	48.7	83.8	75.8	55.7
Total NASF	84.5	102.6	111.0	90.8

Utilization summary derived from utilization and inventory data:

	Classrooms			Teaching Labs		
	Avg Hrs/Wk (Day)	% Stn Occ	Space Factor	Avg Hrs/Wk (Day)	% Stn Occ	Space Factor
Public col and univ (nine institutions)	24.0	61.8	0.90	13.3	71.4	1.17
Public comm cols (two institutions)	10.4	61.8	4.04	13.4	69.8	3.09
Private cols and univ (eleven institutions)	16.1	63.8	2.02	8.7	54.0	2.83

Table 5: CALIFORNIA SPACE STANDARDS AND FACTORS

Room Type	Range	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH	NASF FTE Stu
1. Classrooms	-	34	66%	15	0.67	-
2. Labs (14 subject fields and 24 junior college fields)						
Life and biology	High	20	80%	60	3.75	-
	Low	25	85%	55	2.60	-
MPE	High	20	80%	110	6.90	-
	Low	25	85%	30	1.90	-
Social sciences	High	20	80%	60	3.75	-
	Low	25	85%	30	1.40	-
Humanities	High	20	80%	65	4.05	-
	Low	25	85%	40	1.90	-
Professions	High	20	80%	60	3.75	-
	Low	25	85%	30	1.40	-
Junior colleges	High	25	85%	200	9.40	-
	Low	25	85%	30	1.40	-
3. Office Space						
Universities	-	-	-	130	-	-
Colleges	-	-	-	110	-	-
Jr colleges, enrollment under 1000	-	-	-	80	-	140
Jr colleges, enrollment 1000 or more	-	-	-	80	-	160
4. Library						
Stack	-	.10 ASF/volume				
Study	-	Stations for 20% of enrollment				
Service	-	400 square feet basic 140 ASF/FTE staff				

Table 6: COLORADO SPACE STANDARDS AND FACTORS

1. Classrooms and Classroom Service Space

Hrs/Wk	% Stn Occ	ASF/Stn	ASF/WSH
30	67	16.125 (15 + 7.5% Service)	0.80

2. Teaching Laboratories and Service Space

High	15	80	70.125 (55 + 27.5% Svc)	5.84
Low	20	80	47.0 (40 + 17.5% Svc)	2.94

3. Offices

168 ASF per FTE faculty (120 ASF + 40% Svc and Clerical)

4. Library

Readers: 6.25 ASF/FTE student, universities
5 ASF/FTE student, other institutions

Stacks: 0.0833 ASF per volume

Service: 25% of stack and reader space

Table 7: COLORADO INVENTORY AND UTILIZATION DATA, 1968

Square Feet per Student Station in Class Laboratories

Institution Type	NASF/Stn
1. State colleges and universities	44
2. State 2-year colleges	69
3. All state institutions	46
4. District 2-year colleges	39
5. Private colleges and universities	33
6. All institutions	45

Table 8: CONNECTICUT SPACE FACTORS AND STANDARDS

	Gross Sq Ft Student	Gross Sq Ft Student
1. Nonresidential (subtotal)	147	
Instructional		98
Research		24
General		14
Auxiliary		1
2. Residential (subtotal)	237	
3. Total Space	484	

Table 9: DELAWARE SPACE STANDARDS AND FACTORS

(Recommended by Academy for Educational Development)

Classroom

Less than 1,000 FTE students	1.00	NASF/WSH
With 1,000 to 3,000	0.83	"
More than 3,000	0.67	"

Laboratory

Graduate program including agriculture	4.5	NASF/WSH
Undergraduate liberal arts program	3.0	"
Technical programs	4.5	"

Office

An allowance of 140 net assignable square feet per person re[illegible]iring office space (to include office-service space and conference rooms).

Library

An allowance of 1 NASF/10 volumes for stack space.
An allowance of 20 NASF/reader for 25 percent of the students.
Service space to be treated similar to office space.

All other

Special use facilities, general-use facilities, supporting facilities, and residential facilities should depend on the needs of the individual facility.

Table 10: DELAWARE INVENTORY AND UTILIZATION DATA

Inventory, Fall 1967: NASF/FTE Student by Room Type and Institution

Room Type	Del Tech and Comm Col	Del St Col	U of Del	Brandy-wine	Wesley Col
Classroom	63.92	39.50	13.16	13.57	11.50
Laboratory	43.30	66.45	39.00	-	16.47
Office	24.32	35.93	24.81	6.03	21.13
Study facilities	8.68	17.82	15.75	1.14	7.81
Special-use facilities	2.71	44.35	20.16	3.23	23.56
General-use facilities	30.40	73.17	13.99	11.41	36.18
Supporting facilities	21.64	4.66	11.18	1.48	13.72
Total NASF/FTE student	195.97	281.88	138.05	36.86	130.37

Utilization, Classroom and Laboratory, Fall 1967

Institution	Classroom			Laboratory		
	Student Contact Hours	NASF	NASF per SCH	Student Contact Hours	NASF	NASF per SCH
Del Tech and Comm Col	7,666	17,681	2.306	615	8,230	13.38
Delaware State College	11,454	30,540	2.667	2,549	48,423	19.00
University of Delaware	107,860	86,487	.801	26,533	107,869	4.07
Subtotal	126,980	134,708	1.061	29,697	164,522	5.54
Brandywine College	14,794	10,576	.715	1,968	3,320	1.69
Wesley College	10,737	8,404	.782	3,362	12,038	3.58
Subtotal	25,531	18,980	.743	5,330	15,358	2.88
Grand Total	152,511	153,688	1.008	35,027	179,880	5.13

Table 11: FLORIDA SPACE STANDARDS AND FACTORS

	Summary, NASF/FTE Enrollment				
	Junior Colleges by Enrollment				
	Under 1000	1000-1999	2000 and Over	Colleges	Universities
1. Classrooms	14.1	13.1	12.1	12.4	10.1
2. Class labs	11.8	10.1	8.9	6.5	8.8
3. Offices	11.7	11.7	11.7	13.7	17.7
4. Study	7.8	7.6	7.5	10.2	11.8
5. Special use	15.0	15.0	15.0	15.0	18.0
6. General use	10.2	8.2	6.2	30.0	33.0
7. Supporting	2.5	2.3	2.2	5.1	6.0
8. Residential	0.0	0.0	0.0	58.4	60.9
Total	73.1	68.0	63.6	151.3	166.3

	Standards for Classrooms and Class Laboratories				
	Junior Colleges by Enrollment				
	Under 1000	1000-1999	2000 and Over	Colleges	Universities
Classrooms					
Hr/Wk	28	28	28	30	33
% Stn occ	60	65	70	60	60
NASF/Stn	18	18	18	16	15
NASF/WSH	1.07	0.99	0.92	0.89	0.76
Class Labs					
Hr/Wk	18	21	24	20	21
% Stn occ	80	80	80	80	80
NASF/Stn	55	55	55	55	55
NASF/WSH	3.82	3.27	2.87	3.43	3.27

Table 12: FLORIDA INVENTORY AND UTILIZATION DATA, 1968

Reported in North Carolina Facilities Inventory and Utilization Study, 1968

Inventory: Percentage Distribution of Net Assignable Area by Room Type and Institutional Control

	Net Assignable Sq Ft	Clrm %	Lab %	Office %	Study Facils %
Public cols and univ	9,739,949	8.0	25.1	19.7	8.5
Public jr cols	3,882,080	23.8	22.0	16.2	10.1
Priv cols and univ	5,249,804	9.4	11.5	11.7	8.3
Priv jr cols	182,543	8.7	2.0	4.8	2.9
Total, public and priv inst	19,054,376	12.2	20.3	16.4	8.8

Utilization: Scheduled Hours per Week and Percent Stations Occupied when Room in Use, Classrooms and Class Labs by Institutional Control

	Classrooms		Class Labs	
	Hr/Wk	% Stn Occ	Hr/Wk	% Stn Occ
Public cols and univ	24.4	58.8	8.6	57.9
Public jr cols	22.7	60.0	14.0	59.6
Priv cols and univ	16.6	51.4	3.4	66.4
Priv jr cols	19.0	52.4	0	0
Total, public and priv inst	21.9	57.9	9.1	59.9

Table 13: ILLINOIS SPACE STANDARDS AND FACTORS

Room Type	Range	Hrs/Wk	Stn Occ	NASF/Stn	NASF/WSH
1. Classroom	-	30	60%	15	0.83
2. Labs (10 subject fields subdivided into 68 master areas)					
Agriculture	High	20	80%	160	10.00
	Low	24	80%	65	3.39
Business	High	20	80%	32	2.00
	Low	24	80%	32	1.67
Education	High	20	80%	65	4.06
	Low	24	80%	32	1.67
Engineering	High	20	80%	160	10.00
	Low	24	80%	32	1.67
Arts	High	20	80%	100	6.25
	Low	24	80%	48	2.50
Journalism	High	20	80%	96	6.00
	Low	24	80%	48	2.50
Liberal Arts	High	20	80%	68	4.25
	Low	24	80%	30	1.56
Library Science	High	20	80%	48	3.00
	Low	24	80%	48	2.50
Physical Education	High	20	80%	250	11.00
	Low	24	80%	32	1.67
R.O.T.C.	High	20	80%	32	2.00
	Low	24	80%	32	1.67

3. Offices
   - Staff > 25: 135 NASF/FTE Staff
   - Staff < 25: 135 NASF/FTE Staff and conference space
4. Research space based on research demand units calculated for 105 research areas
5. Storage based on percent of total NASF space allotment for department
6. Library Stack--.1 NASF/Volume to .07 NASF/Volume based on size of library
   Study--7.5 NASF/FTE undergrad + 7.5 NASF/FTE grad + 15 NASF/FTE faculty
   Service--25% of study space
7. Commons Space--1.5 NASF/FTE student
   1.0 NASF/FTE student additional if large % of commuters
8. Physical Plant--2.2% of total NASF
9. Student Services--8.25 NASF/FTE student residential
   9.25 NASF/FTE student commuter
10. Health Services--Range of 4.0 NASF/FTE student to 1.5 NASF/FTE Student based on increases in enrollment
11. Inactive Space--1% of total academic space
12. Non I & R Gymnasium--12.1 NASF/Undergrad + allowances for grad students and staff
13. Purchasing Stores--Range of 1.0 NASF/FTE student to 4.5 NASF/FTE Student based on level of student

Table 14: ILLINOIS INVENTORY AND UTILIZATION DATA

Inventory from Statewide Space Survey, Fall Term 1965

Type of Space	Statewide Grand Mean, NASF/FTE Student
Classrooms	16.5
Teaching laboratories	13.7
Office, including conference	146.52
Library, reading and study	5.1

Utilization: Scheduled Hours per Week and Percent Stations Occupied When Room in Use, Classrooms and Class Labs by Institutional Control

	Classrooms			Class Labs		
	Hr/Wk	% Stn Occ	NASF/Stn	Hr/Wk	% Stn Occ	NASF/Stn
Public universities	29.7	56.4	14.7	18.9	79.9	69.7
Public junior colleges	39.3	59.1	16.6	30.8	91.4	33.7
Private universities	23.2	58.2	15.8	15.7	74.7	51.7
Private 4-year colleges	19.8	56.2	16.8	15.2	70.0	43.8
Private junior colleges	20.1	56.9	19.3	14.1	77.2	49.3
Total, public and private institutions	23.5	57.0	16.3	16.6	74.3	47.8

Table 15: INDIANA SPACE STANDARDS AND FACTORS

Room Type	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH	NASF FTE Fac
1. Classrooms	30	50%	15.0	1.00	-
2. Laboratories					
Teaching	20	75%	67.4	4.50	-
Research-Soc Sci	-	-	-	-	10
Beh Sci	-	-	-	-	100
Phy Sci	-	-	-	-	300
Life Sci	-	-	-	-	600
Music Practice	40	100%	72.0	1.80	-
Music Studio	40	100%	496.0	12.40	-
3. Offices	140 NASF/FTE staff				
4. Library					
Study	3.5 NASF/undergrad, law, and graduate student				
Stack	.10 NASF/volume				
Carrel	3.5 NASF/law and graduate student				
Service	32% of study and carrel				
Museum	1% of total				
5. Gymnasium	15.70 NASF/WSH				
6. Storage	2% of academic for each department				

Table 16: INDIANA INVENTORY AND UTILIZATION DATA

Inventory, Fall 1967:

NASF/FTE Student by Type of Space and Type of Institution

Type of Space	NASF/Stn (Statewide)	Private Support	Public Support: State Univ.	Public Support: Regional Campuses	Statewide
Classrooms	14.4	17.5	10.0	15.1	13.1
Teaching labs	38.3	31.0	30.0	12.7	28.3
Research labs	194.0	3.4	12.8	0.6	8.1
Offices	129.2	19.3	26.6	10.3	22.2
Library	60.4	19.0	9.1	5.3	12.0
Support	-	8.8	17.7	3.1	13.0
General use	-	24.5	10.1	7.4	14.7
Medical care	-	0.3	1.3	-	0.8
Residential	-	1.0	2.3	-	1.5
Other	-	5.4	6.0	1.9	5.3
Total		130.5	125.9	56.3	119.4

Office Area/FTE Staff

Department Function				
Admin and genl serv	179	140	-	154
Instruction and research	142	158	-	146
Other nonres depts	131	115	-	122
Total	151	143	89	141

Library	Study	Carrell	Total
Statewide area/station	27.6	35.7	60.4

Table 16: INDIANA INVENTORY AND UTILIZATION DATA (cont'd.)

Utilization:

Composite Utilization (NASF/WSH) for Classrooms by Campus Size and Program Emphasis, Fall 1967

School Grouping	Avg Room Hours		Percent Stn Use		NASF/WSH	
	Day	Eve	Day	Eve	Day	Eve
Campus Size						
Under 500	15.7	4.3	47	56	1.97	6.34
501- 750	18.6	3.7	46	38	1.63	11.45
751-1500	17.7	5.9	56	44	1.42	5.68
1501-5000	18.8	9.8	55	49	1.36	3.10
Over 5000	30.0	6.1	56	49	.80	4.58
Program Emphasis						
Liberal Arts under 2000	18.2	4.8	52	41	1.52	6.83
Liberal Arts over 2000	19.9	8.0	55	49	1.24	3.33
Engr/technical	20.5	4.3	56	41	1.35	8.37
Regional campuses	16.4	9.7	57	51	1.38	2.83
Multiprogram	31.2	5.2	56	48	.78	5.61
Statewide Total	23.9	7.1	56	49	1.02	4.02

Table 16: INDIANA INVENTORY AND UTILIZATION DATA (cont'd.)

Utilization (cont'd.):

Teaching Lab Utilization by Campus Size, Program Emphasis and Source of Support, Fall 1967

School Grouping	Average Rm Hrs	Percent Stn Use	NASF/Stn	NASF/WSH
Campus Size				
Under 500	14.9	77	42.1	4.98
501- 750	12.7	51	28.9	6.33
751-1500	12.2	60	36.5	7.93
1501-5000	18.0	58	37.4	6.05
Over 5000	19.5	66	35.3	4.44
Program Emphasis				
Liberal Arts under 2000	12.5	58	36.0	7.03
Liberal Arts over 2000	19.0	64	37.4	5.23
Engr/technical	13.5	61	42.7	9.18
Regional campuses	20.0	57	33.2	4.84
Multiprogram	19.5	66	35.3	4.48
Source of Support				
Public	20.1	65	36.4	4.48
Private	14.6	60	35.3	6.52
Statewide Total	17.5	64	35.9	5.12

Table 17: IOWA STATE UNIVERSITY SPACE STANDARDS AND FACTORS

Room Type	Range	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH
1. Classrooms (minimum size of 400 square feet)					
Class Size: Less than 35	-	30	60%	18	1.00
35 to 60	-	30	60%	15	0.83
61 to 150	-	30	60%	12	0.66
Over 150	-	30	60%	10	0.55
2. Laboratories (based on 63 subject fields)					
Agriculture	High	20	80%	120	7.50
	Low	20	80%	22	1.38
Engineering	High	20	80%	120	7.50
	Low	20	80%	40	2.50
Home Economics	High	20	80%	110	6.88
	Low	20	80%	22	1.38
Science and Humanities	High	20	80%	96	6.00
	Low	20	80%	20	1.25
Vet Medicine	High	20	80%	65	4.06
	Low	20	80%	40	2.50

3. Library

Stacks--0.1 NASF/Volume
Study--30 NASF/Station for 25% of enrollment
Carrels--28 NASF
Faculty study--48 square feet
Service--19% of total library

4. Offices	College	Department
Administration head	225 NASF	180 NASF
Conference	400 NASF	300 NASF
Reception	200 NASF	150 NASF
Clerical	80 NASF	80 NASF
Files	200 NASF	100 NASF
Professor	-	150 NASF
Instructor (double)	-	160 NASF
Graduate	-	70 NASF

Table 18: KANSAS SPACE STANDARDS AND FACTORS

Standards: Kansas State Board of Regents, December 1968, cited 175 gross square feet per student as "conservative and reasonable" for the six state schools under its jurisdiction. Assuming a net to gross ratio of 0.6, this becomes 105 NASF per FTE student.

Table 19

KANSAS INVENTORY AND UTILIZATION DATA

Inventory, 1968:

Institutional Control	Number of Institutions	Average NASF/FTE
Public 4-year institutions	7	97.6
Private 4-year	18	164.6
Community junior colleges	16	108.4
Private 2-year colleges	5	154.7

NONRESIDENTIAL SPACE, NASF/FTE STUDENT, WEIGHTED AVERAGES

	Classrooms	Teaching Labs	Offices	Libraries	Total
4-year public	9.05	16.28	19.30	8.59	97.65
4-year private	24.59	21.20	17.93	18.31	164.57
Community junior	20.89	26.48	10.46	10.45	108.42
2-year private	23.11	28.58	21.65	16.82	154.74

Table 19: KANSAS INVENTORY AND UTILIZATION DATA (cont'd.)

Utilization, 1968: Summary of Space Factors for Classrooms and Teaching Laboratories

College Group	Classrooms			Teaching Labs		
	High	Low	Weighted Avg	High	Low	Weighted Avg
4-year public	1.17	0.62	0.74	5.29	1.77	2.94
4-year private	2.42	1.07	1.71	24.94	1.54	5.77
2-year private	3.70	1.15	1.69	13.64	1.94	7.55
Community junior	6.06	0.77	1.63	15.23	1.59	4.37

Office Area per Employee[1] Requiring Office Space

College Group	Weighted Avg[2] Sq Ft/Person
4-year public	142.13
4-year private	237.33
2-year private	186.30
Community junior	174.92

[1]Includes all employees--full-time, part-time, graduate students

[2]Includes offices, conference rooms, and office service areas

Table 20: KENTUCKY SPACE STANDARDS AND FACTORS

Room Type	Range	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH
1. Classrooms					
20 Stns/Classroom	-	31	66%	17	0.83
30 Stns/Classroom	-	31	66%	15	0.74
50 Stns/Classroom	-	31	66%	14	0.68
125 Stns/Classroom	-	31	66%	10	0.49
250 Stns/Classroom	-	31	66%	9	0.44
2. Laboratories					
Undergrad-Science	High	22	85%	50	2.95
	Low	22	85%	40	2.14
Undergrad-Lib Arts	High	22	85%	45	2.41
	Low	22	85%	35	2.06
Universities	High	22	85%	60	3.21
	Low	22	85%	50	2.95

3. Offices
   Colleges and universities--14 NASF/FTE student
   Universities-grad--20-40 NASF/FTE student
   Community colleges--12 NASF/FTE student

4. Residential Space
   Public--113.5 NASF/boarded student
   Private--120.0 NASF/boarded student

5. Other Space (service, research, auditorium, library, physical education, student union)
   Dining and lounge--52 NASF/boarded student for lounge and dining
   Community colleges--75.4 NASF/student
   General--66 NASF/FTE student

Table 21: KENTUCKY INVENTORY AND UTILIZATION DATA

Inventory (1967): Net Assignable Square Feet by Room Type and Institutional Control

Room Type	Public Sector	Independent Sector	Total Commonwealth
Classroom	785,636	410,909	1,196,545
Laboratory	1,158,420	312,384	1,470,804
Office	1,102,618	438,340	1,540,958
Study	571,114	354,140	925,254
Special use	1,484,235	399,838	1,884,073
General use	882,869	969,727	1,852,596
Support	1,456,986	592,643	2,049,629
Medical care	192,690	2,076	194,766
Residential	3,734,244	1,785,901	5,520,145
Prorate	299,653	64,341	363,994
Other	545,274	14,383	559,657
Total	12,213,739	5,344,682	17,558,421

Utilization

	Percent Hrs Scheduled of Institutional Wk	Percent Hrs Scheduled of 44 Hr Week	Percent Stn Occ
Public Sector			
General classrooms	52	61	31
Laboratories	30	36	21
Independent sector			
General classrooms	40	41	23
Laboratories	20	21	13
Commonwealth Summary			
General classrooms	49	55	29
Laboratories	27	32	19

Table 22: MISSOURI SPACE STANDARDS AND FACTORS

The following standards and factors have been tentatively adopted by six Missouri institutions:

Classroom space (excl. service)	0.833 NASF/WSH
Laboratory space (excl. service)	3.75 NASF/WSH
Faculty office space	125 NASF/FTE fac plus 25% of office space for service areas
Library space	
Reader	8.33 NASF/FTE stu
Stack (50,000 vols/first 600 FTE stu. plus 200 students)	1 NASF/15 vols 10,000 vols. each add'l.
Service	25% of reader and stack
Administrative space	5 NASF/FTE stu
Physical plant space	7.5% of academic and general space
Other facilities by enrollment	
Under 1000	25 NASF/FTE stu
1000 to 3000	16 NASF/FTE stu, minimum of 24,000
Over 3000	14 NASF/FTE stu, minimum of 48,000

Table 23: MISSOURI INVENTORY AND UTILIZATION DATA

Inventory, 1968: Gross Sq Ft per FTE Student

Type of Space	Public Institutions	Private Institutions	All Institutions
Classroom	10.7	20.3	13.6
Laboratory	18.1	33.3	22.7
Office	14.9	26.2	18.3
Study	8.7	18.2	11.5
Special	9.7	15.3	11.3
General	12.0	35.9	19.1
Support	5.6	18.5	9.5
Medical	1.7	8.4	3.7
Residential	43.0	87.8	56.4
Other	62.7	134.4	84.2
Total Gross Sq Ft per FTE Student	187.1	398.3	250.3

Table 24: MONTANA SPACE STANDARDS AND FACTORS

Standards for Station Use

Classrooms: 30 Hrs/Wk @ 60% Stn Occ = 18 Hrs/Wk/Stn

Class Labs, upper and lower division:
20 Hrs/Wk @ 80% Stn Occ = 16 Hrs/Wk/Stn

Space Factors:

Room Type	Lower Div	Upper Div	
1. Classrooms	0.83	0.83	
2. Class labs			
200 Life Science	2.81 4.38	4.38) 7.19)	Range
300 MCPE Sciences	1.88 7.50	1.88) 11.52)	Range
400 Behavioral Science	2.19	2.81	
500 Humanities	2.81	4.38	
600 Professions	2.19 2.81	2.19) 4.38)	Range
700 Technical-Vocational	2.19 7.19	2.19) 7.19)	Range
3. Offices - Faculty	160 Sq Ft/FTE		
Public Service	160 Sq Ft/FTE		
Administration	320 to 120 Sq Ft/FTE		
4. Library - Study Space	5 Sq Ft/FTE lower div 7 Sq Ft/FTE upper div 9 Sq Ft/FTE grad student		
Stack Space	0.1 Sq Ft/volume		

Table 25: NEBRASKA SPACE STANDARDS AND FACTORS

	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH
1. Classrooms	30	65%	15	0.77
2. Laboratories	20	80%	30	1.88

Table 26: NEW HAMPSHIRE INVENTORY AND UTILIZATION DATA

Statewide Summary of Assignable Areas in Academic Type Space:

Room Type	NASF
Classroom	522,679
Laboratory	637,639
Office	290,179
Library	324,899

Table 27: NEW JERSEY SPACE STANDARDS AND FACTORS

Planning Modules, Net Square Feet per Full-Time Student

Undergraduate Public Institutions	Classrooms	Class Labs	Office		Library	Other*	Total NASF
			Fac	Adm			
4-Year College							
Education	9.6	10.9	9.5	3.7	11.0	36.5	81.2
Liberal Arts	12.3	5.2	9.5	3.7	11.0	36.5	78.2
Engineering	15.0	28.6	15.2	3.7	11.0	46.9	120.4
University							
Education	10.8	13.1	9.5	3.7	11.0	43.5	91.6
Liberal Arts	13.0	10.0	9.5	3.7	11.0	43.5	90.7
Engineering	12.9	46.9	15.2	3.7	11.0	53.9	143.6
2-Year College							
General academic	11.4	6.5	9.5	3.7	8.7	36.0	75.8
Career, nonlaboratory	11.0	13.0	9.5	3.7	7.0	36.0	80.2
Career, laboratory	10.3	47.9	9.5	3.7	7.0	36.0	114.4

*Other types of space include faculty research, data processing, physical education, audiovisual, assembly, dining and snack facilities, lounge and recreation, merchandise, health, student affairs, heat, and storage.

Table 28: NEW JERSEY INVENTORY AND UTILIZATION DATA

Comparison of Actual NASF per Full-Time Day Student at Six Public, Nonresidential, Education Colleges with Standard Planning Modules for This Type of Institution

Institution	Classroom	Class Labs	Office		Library	Other*	Total NASF
			Fac	Adm			
Standard	9.6	10.9	9.5	3.7	11.0	36.5	81.2
Glassboro	9.8	15.4	8.7	4.0	7.6	30.1	75.6
Jersey City	7.4	6.9	6.6	2.9	4.2	24.2	52.2
Montclair	10.1	13.9	7.9	2.7	9.7	30.2	74.5
Newark	11.3	11.5	8.7	4.7	5.0	31.6	72.8
Paterson	12.7	9.0	7.9	2.9	14.2	33.9	80.6
Trenton	8.0	15.0	6.5	4.1	4.5	35.7	73.8

*Other types of space include faculty research, data processing, physical education, audiovisual, assembly, dining and snack facilities, lounge and recreation, merchandise, health, student affairs, heat, and storage.

Table 29: NEW YORK INVENTORY AND UTILIZATION DATA

From 1967 Statewide Inventory of Higher Education Facilities

Institution Control, Level and Type of Program	Clrm	NASF/FTE Student Lab	Office	Study Facils
A. 2-Year Colleges				
1. Private institutions	24.0	29.2	18.0	17.2
2. City University of N. Y.	14.7	11.0	10.9	5.7
3. Community colleges	9.1	12.7	9.3	3.7
4. Ag and tech colleges	12.2	38.0	16.9	4.9
B. 4-Year and Graduate				
1. Private institutions				
a. 4-year colleges	16.8	18.6	18.6	12.9
b. Doctoral institutions	13.6	25.0	27.1	12.3
2. City University of N. Y.				
a. 4-year colleges	8.8	11.1	11.3	5.2
b. Doctoral center	8.9	3.9	40.5	9.6
3. State University				
a. University colleges	17.2	22.8	22.1	8.4
b. Statutory colleges	21.6	141.2	65.4	19.4
c. University centers	13.9	31.7	36.0	16.9
C. Professional programs				
1. Private institutions				
a. Law	20.4	1.6	20.8	39.7
b. Medicine	17.7	224.8	119.2	24.1
c. Religion	33.8	4.0	47.9	58.2
2. State University				
a. Medical centers	18.9	235.7	129.5	22.5

Table 30: NORTH CAROLINA INVENTORY AND UTILIZATION DATA

Selected Inventory Net Areas and Factor Indicating Utilization

Institution by Control and Level	NASF/FTE		Class Factor*		Lab Factor*	
	1968	1967	1968	1967	1968	1967
1. Consolidated university	120	133	1.20	1.30	5.83	7.03
2. Regional universities	82	76	1.12	1.17	4.18	4.04
3. Public senior colleges	102	99	1.57	1.66	4.67	3.81
4. Private universities	211	188	1.57	-	7.56	-
5. Private 4-year colleges	112	108	1.68	2.08	6.52	8.40
6. Private 2-year colleges	88	86	1.21	1.30	3.05	4.00
7. Community col. system	81	84	1.21	1.20	3.72	4.00

$$*\text{Factor} = \frac{\text{NASF/Stn}}{\text{Hrs/Wk} \times \% \text{ Stn Occ}}$$

Table 31: OHIO SPACE STANDARDS AND FACTORS

Room Type	Hrs / Wk	NASF / Stn	NASF
1. Classrooms			
Lecture halls	30	10	-
Large (60-100)	30	13	-
Medium (30-60)	30	15	-
Small (15-30)	30	18	-
Seminar	30	20	-
2. Teaching Labs			
Lower division	20	40	-
Upper division	20	60	-
Graduate	20	75	-
Drafting	20	35	-
Fine Arts	20	45	-
3. Offices			
Faculty	-	-	110
Stenographic	-	-	100
Department head	-	-	150
Counselling office	-	-	100
4. Library			
Reading space	-	25	-
Carrels	-	35	-
Stacks--.08 NASF/Volume			

Table 32: OKLAHOMA SPACE STANDARDS AND FACTORS

Room Type	Range	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH
1. Classrooms					
Enroll <1000	-	27	67%	16	0.89
1000 ≤E ≤3000	-	28	67%	16	0.84
3000 <enrollment	-	30	67%	16	0.80
2. Laboratories (breakdown by subject field)					
Life sciences	-	24	80%	75	3.90
MCPE sciences	-	24	80%	144	7.50
Behav sciences	-	24	80%	60	3.12
Humanities	-	24	80%	48	2.50
Technical-Vocational (nine subject field areas)					
	High	24	80%	96	5.00
	Low	24	80%	38	1.97
General	-	24	80%	48	2.50

3. Offices---5 NASF/Lower division FTE student
7 NASF/Upper division FTE student
12 NASF/Graduate FTE student
Service---25% of total

4. Other Instructional Space, by enrollment
Under 1000----------24 NASF/FTE student
1000 to 3000----------16 NASF/FTE student and minimum of 24,000 NASF
Over 3000----------14 NASF/FTE student and minimum of 48,000 NASF

5. Library
Reader----5.00 NASF/FTE lower division, 6.25 NASF/FTE upper division, and 7.50 NASF/FTE graduate
Stack-----.0667 NASF/Volume
Service---25% of reader + stack

6. Administration Space---5 NASF/FTE student

Table 33: OKLAHOMA INVENTORY AND UTILIZATION DATA

Fall Semester, 1967

	Net Permanent Space Available	WSH 1967	Ratio NASF/WSH
Classrooms	642,156	801,672	0.80
Class laboratories	805,803	-	-
Faculty offices	464,520	-	-
Libraries	520,932	-	-
Other instructional	903,678	-	-
Administrative	259,484	-	-
Research:			
Lab facilities	401,817	-	-
Offices	57,885	-	-

Table 34: OREGON SPACE STANDARDS AND FACTORS

Room Type	Hrs Wk	% Stn Occ
1. Classrooms	30	60%
2. Laboratories	20	80%
3. Physical Education	30	-

Table 35: SOUTH CAROLINA SPACE STANDARDS AND FACTORS

	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH
1. Classrooms	30	60%	15	0.83
2. Laboratories (by 12 NASF/Stn allotments)				
1	20	80%	32	2.00
2	20	80%	40	2.50
3	20	80%	48	3.00
4	20	80%	56	3.50
5	20	80%	64	4.00
6	20	80%	72	4.50
7	20	80%	80	5.00
8	20	80%	96	6.00
9	20	80%	112	7.00
10	20	80%	128	8.00
11	20	80%	144	9.00
12	20	80%	160	10.00

3. Offices
   - Faculty----------140 NASF/FTE faculty
   - Administration---150 NASF/FTE administration staff
   - Conference--------50 NASF/FTE administration staff

4. Libraries
   - Stacks----.083 NASF/Volume
   - Study-----6.25 NASF/FTE student
   - Service---20% of stack and study space

5. Physical Education---10 NASF/FTE student

6. Health
   - 1st 2000 students--------4.0 NASF/FTE student
   - Next 3000 students-------3.0 NASF/FTE student
   - Next 5000 students-------2.5 NASF/FTE student
   - Next 5000 students-------2.0 NASF/FTE student
   - Beyond 15,000 students---1.5 NASF/FTE student

7. General Use---10-15 NASF/FTE student

8. Storage---2-4 NASF/FTE student

9. Physical Plant---2-3% of NASF

Table 36: SOUTH DAKOTA SPACE STANDARDS AND FACTORS

Room Type	NASF/Stn	Hrs/Wk	% Stn Occ
Classrooms			
Fixed seat	12	30	67
Movable seat	15	30	67
Seminar	20	30	67
Teaching labs	30) 150) Range	24	80
Offices	120 SF/FTE Occ		
Libraries-Study space	25 NASF/Stn for 20% of enrollment		
Stack space	3 NASF/FTE student		
Stack capacity	12 Vols/Sq Ft of stack space		

Table 37: SOUTH DAKOTA INVENTORY AND UTILIZATION DATA

	NASF		NASF/Stn		Hrs/Wk		% Stn Occ	
	1967	1968	1967	1968	1967	1968	1967	1968
Classrooms								
Public	191,311	211,873	14.1	14.7	26.4	26.2	61.1	60.1
Private	78,172	84,233	13.8	14.5	19.3	18.9	51.5	52.3
Total	269,483	296,106	14.0	14.7	23.2	23.2	55.5	56.9
Class Laboratories								
Public	300,372	317,342	40.1	40.3	15.1	15.8	-	74.4
Private	53,826	55,988	29.0	29.1	7.9	8.4	-	66.6
Total	354,198	373,330	37.9	38.1	12.8	12.8	-	71.1
Offices								
Public	-	275,221	-	115.5	NASF/FTE Occ			
Private	-	58,157	-	132.1	NASF/FTE Occ			
Total	-	333,378	-	118.1	NASF/FTE Occ			

Table 38: TEXAS SPACE STANDARDS AND FACTORS

Room Type	Hrs Wk	% Stn Occ	NASF Stn	NASF WSH
1. Classrooms	30	55%	15	0.90
2. Laboratories (by 13 subject field areas)				
Architecture	20	60%	55	4.40
Art	20	60%	60	4.80
Biology	20	60%	35	2.80
Chemistry	20	60%	45	3.60
Communication	20	60%	50	4.00
Language	20	60%	35	2.80
Geology	20	60%	50	4.00
Home Economics	20	60%	45	3.60
Music	20	60%	30	2.40
Physics	20	60%	45	3.60
Business Admin.	20	60%	40	3.20
Education	20	60%	40	3.20
Engineering	20	60%	60	4.80

3. Offices-Professional---140 NASF/FTE professional
   Graduate-------120 NASF/FTE graduate assistant

4. Support---120 NASF/FTE staff
   50 NASF/FTE hourly personnel

5. Conference---20 NASF/FTE professional

6. Research (by 21 research field areas)

7. Professional-Lg.---250 NASF/FTE research professional
   Sm.----50 NASF/FTE research professional

8. Graduate Assistant-Lg.---120 NASF/FTE research graduate assistant
   Sm.----40 NASF/FTE research graduate assistant

9. Public Service---80 NASF/FTE

10. Storage---5% of NASF for organizational unit

Table 39: VIRGINIA SPACE STANDARDS AND FACTORS

As Reported in North Carolina
Facilities Inventory and Utilization Study, 1968

	Hrs/Wk	% Stn Occ
Classrooms	30	60
Class labs	20	80

Table 40: WEST VIRGINIA SPACE STANDARDS AND UTILIZATION DATA

As Reported in North Carolina
Facilities Inventory and Utilization Study, 1968

Standards	Hrs/Wk	% Stn Occ
Classrooms	30	66.6
Class labs	20	80.0
Utilization (1967)		
Public Universities		
Classrooms	25	84.1
Class labs	15	93.1
Public Colleges		
Classrooms	24	62.0
Class labs	17	72.4
Private Colleges		
Classrooms	27	57.9
Class labs	13	74.3
Junior Colleges		
Classrooms	22	59.5
Class labs	18	65.9

Table 41: WISCONSIN SPACE STANDARDS AND FACTORS

1. Classrooms:

15 sq. ft./student station
\+ 1 sq. ft. for service
\+ 0.5 sq. ft. for obsolescence

16.5 NASF/Stn

Hrs/Wk = 30; % Stn. Occ. = 0.67

$$\text{Space factor} = \frac{16.5}{0.67 \times 30} = 0.821 \text{ NASF/WSH}$$

2. Laboratories:

NASF/Stn = 55 sq. ft. per station plus 16.5 sq. ft. for service
Hrs/Wk = 24
% Stn. Occ. = 80

$$\text{Space factor} = \frac{71.5 \times \text{hrs. one student in lab}}{24 \times 0.80}$$

3. Offices: 135 NASF/FTE staff, to include service, conference, etc., as overall average

4. Libraries:

Reading rooms	25 NASF/Stn x 20% enrollment
Carrel space	25% grad. students x 45 NASF/Stn
Office and auxiliary support	135 NASF x FTE lib staff
Stacks	10 vols/sq ft, number of volumes to be determined by university

Table 42: WISCONSIN INVENTORY AND UTILIZATION DATA

Summary of Net Assignable Space Occupied, Fall 1967

	University of Wisconsin (four campuses)	Wisconsin State University (nine campuses)
Classroom	485,446	453,256
Class labs	632,649	674,470
Research	1,333,791	61,278
Office/conference	899,752	588,227
Library	414,526	247,808
Other study	34,558	32,747
Athletic & phys ed	462,600	517,148
Special use	77,680	209,489
General use	316,900	741,484
Support	203,784	318,403
Totals	4,861,686	3,844,310

Utilization

	University of Wisconsin (four campuses)	Wisconsin State University (nine campuses)
Classrooms:		
Avg NASF/Stn	11.97	14.90
Avg Hrs/Wk	26.54	31.43
Avg % Stn Occ	53.74	61.56
Factor	0.84	0.77
Class Laboratories:		
Avg NASF/Stn	43.29	41.36
Avg Hrs/Wk	20.96	22.55
Avg % Stn Occ	74.63	75.20
Factor	2.77	2.47

APPENDIX C

ANNOTATED BIBLIOGRAPHY

Academy for Educational Development, Alliance for Greatness: A Comprehensive Study of Higher Education in the State of Delaware, for the Higher Educational Aid Advisory Commission, State of Delaware, Feb. 1969.

Reports the extent, condition, and utilization of higher education facilities with data from three public and two private institutions. Makes recommendations in such matters as updating curriculum programs, interinstitutional cooperation, an urban university, technical and continuing education, research and development in higher education, and enrollment projections.

Arkansas Commission on Coordination of Higher Educational Finance, A Study of Physical Facilities at Arkansas Colleges and Universities; Existing Facilities - 1968, Projected Facility Needs - 1975 and 1980, Report Number Two, July 1969.

Comprehensive study of physical facilities including inventory, utilization, and projected needs in 1975 and 1980 for 22 of 24 existing colleges and universities. Enrollment projections made for all 24 institutions.

Bareither, Harlan D. and Schillinger, Jerry L., University Space Planning, The University of Illinois Press, Urbana, Ill., 1968.

Textbook for general use by planners of higher education facilities presenting a numeric method for deriving physical facility requirements from academic program statements.

Bayless, Paul C. et al., Higher Education in Indiana, Current Status Report 5, Facilities Inventory - Utilization, 1968.

Detailed inventory and utilization data from 49 of 57 public and private institutions of higher education in Indiana. Data grouped by source of institutional support, enrollment size of institution, and - in utilization studies - by type of program and day or evening schedule.

Cleek, John E. and Coffelt, John J., Capital Improvements Program, The Oklahoma State System of Higher Education 1965 - 1975, Phase Two, Oklahoma State Regents for Higher Education, Oklahoma City, Feb. 1968.

Plan for completion of capital improvements program introduced in 1964 with Phase One. Phase Two follows methods and classifications suggested by U. S. Office of Education in 1967; includes inventory of existing space by types, some measures of utilization, projections of future enrollment, projection of future space needs using standards and factors, and estimated cost of required building program. Data from 18 public institutions of higher education.

Colorado Commission on Higher Education, Capital Construction Requirements for Higher Education in Colorado, 1969-79, Denver, Colo., 1968.

Summarizes capital construction requirements over a 10-year period. Inventory data from 22 campuses, public and private. Includes enrollment projections for each campus, standards and factors in detail, and estimates of additional space needed by type to 1979.

Colorado Commission on Higher Education, Physical Facilities, Colorado Colleges and Universities, Supplementary Analyses, August 1969.

Thirty-eight pages of analyses of inventory data supplementing a January 1969, publication of physical facilities data.

Cresap, McCormick and Paget, Higher Education Facility Needs in the Commonwealth of Kentucky, Vols. I and II, for the Kentucky Council on Public Higher Education, Chicago, Ill., 1968.

Lengthy, detailed report of a study done by professional management consultants for the Commonwealth of Kentucky to establish a comprehensive program for facilities planning. Inventory, utilization, and enrollment data from all accredited institutions in Kentucky. Space requirements projected to 1978 for each institution from enrollment projections and space factors and standards. Data correlated with U. S. Office of Education guidelines.

Edcuational Research and Services Corporation, Higher Education Physical Facilities Inventory, Vol. 1, New Hampshire Higher Education Facilities Commission, Manchester, New Hampshire, 1969.

Study by professional consultants for state commission covering 29 public and private institutions of higher education. Inventory includes land, buildings, and room-by-room data for each responding institution, on 27 HEGIS forms.

Glenny, Lyman A., The Nebraska Study of Higher Education, Jan. 1961.

Study prepared for Nebraska Legislative Council Committee on Higher Education, covers 22 institutions with regard to physical plants, academic programs, faculties, administration, and finance. Reports status of higher education, makes recommendations for growth and improvement for public information and guidance of legislative policy.

Hilgenberg, James F., et al., Space Inventory and Utilization Study, South Dakota Commission on Higher Education Facilities, Pierre, So. Dakota, Nov. 1968.

Annual revision and updating of reporting process begun in 1965. Early reports were of utilization only; this is first one with inventory data. Seven public and five private institutions of higher education participated on cost-sharing basis. Physical facilities inventory by space categories according to U. S. Office of Education code.

Hollis, Ernest V. and Stout, Minard W., Higher Education in Connecticut; Report of a Survey, Vol. I, U. S. Office of Education, December 1964.

Study undertaken for the Connecticut Commission on Higher Education by a staff from the U. S. Office of Education. Explores status, needs, roles, and scopes of various institutions with summary, conclusions, and recommendations for growth and improvement of higher education.

Matsler, Franklin G., Space & Utilization Standards, California Public Higher Education, Sacramento, Sept. 1966.

Report to California's Coordinating Council for Higher Education on the need for space planning and utilization standards, application of standards to the planning process, and suggested standards for office, library, classroom, and laboratory space.

Missouri Commission on Higher Education, Physical Facilities Inventory and Utilization Data, Missouri Colleges and Universities, Jefferson City, Mo., July 1969.

Comprehensive study with data from 12 public and 23 private senior colleges and universities, eight public and seven private junior colleges, six professional, and three theological schools. Space is reported by all combinations of type, control, function, ownership, and institutional type suggested by U. S. Office of Education's 5th Draft. Includes standards and factors tentatively adopted by six institutions.

Montana State Commission for Higher Education, Facilities Planning Guidelines Manual, Helena, Montana, 1969.

Instructions and sample forms for facilities inventory and utilization study. Includes standards and factors for planning classrooms, class laboratories, offices, departmental and organized research space, and libraries.

North Carolina State Commission on Higher Education Facilities, Facilities Inventory and Utilization Study, Fall of 1968, Raleigh, N. C., June 1969.

Complete inventory and utilization data for 17 public and 29 private senior colleges and universities, 12 public community colleges, 12 private 2-year colleges, and 37 public technical institutes. Thorough discussion of standards and space factors, several comparisons with other states, no official standards indicated for this state.

Ohio Board of Regents, Master Plan for State in Higher Education, 1966.

Recommendations by the Ohio Board of Regents for higher education in the state based on a study of present facilities and operation and on projections of future growth and needs.

Pace, John W., Letter to O'Hare Space Men, Iowa State University, March 24, 1969.

Letter transmitting copies of letter, commentary, and tables to department heads and chairmen, Iowa State University, explaining development and use of standards and factors. Lists appropriate factors for various programs and types of space.

Pinnell, Dr. Charles, Guidelines for Planning in Colleges and Universities, Vol. IV, Texas A. & M. University, July 1968.

Report developed for Coordinating Board of Texas College and University System. Vol. IV covers procedures for establishing an inventory system, analyzing utilization of existing facilities, and projecting facility needs through use of planning standards and factors.

Robert Heller Associates, Inc., Meeting New Jersey College and University Facilities Needs through 1980, report to New Jersey State Commission for the Higher Education Facilities Act of 1963, August 1968.

Emphasizes projection of additional facilities needed by 1975-80 through use of planning standards and enrollment projections. Thorough statement of planning standards; inventory data limited to comparing planning standards for a public commuter education college with existing modules at six state colleges.

Rowlands, Ellis M., Procedures, Planning Guides and Cost Data for Community Colleges, State University of New York Office of Architecture and Facilities, Albany, N. Y., January 1967.

A manual prescribing procedures and standards for planning and building community colleges within the State University of New York with data on cost of facilities already built.

South Carolina Advisory Committee on Higher Education, Space Utilization Study for Five State Supported South Carolina Colleges and Universities, November 1967.

Study performed by outside consultants for the advisory committee sets up inventory procedure, inventories five institutions, analyzes utilization of space, and compares utilization with generally accepted standards.

State Education Commission, State of Kansas, Physical Facilities of Colleges and Universities in the State of Kansas, Topeka, Kansas, July 1969.

Discussion of planning standards; one standard advanced for this state. Complete inventory data for 47 public and private institutions, junior and senior level. Space factors computed from inventory data as measures of utilization.

State of Illinois, Board of Higher Education, State-Wide Space Survey, Springfield, Ill., November 1966.

Extensive inventory data, utilization data and indices based on responses of 85 participating institutions from both public and private sectors at every level of instruction.

State of New York, Office of Planning in Higher Education, New York State Higher Education, Facilities Comprehensive Planning Program, Space Inventory Report 2, Albany, N. Y., September 1969.

Presents space indices and ranges derived from inventory data of more than 200 institutions of higher education at every degree level, both public and private.

The Associated Consultants in Education, Inc., Florida Higher Education Facilities Study, Tallahassee, Fla., 1969.

Forty-seven participating institutions grouped as colleges and universities, both public and private, and all junior colleges. For each group, existing facilities are inventoried, utilization is analyzed, future enrollment is projected, and future facility needs forecast using standards and factors for different types of space.

University of California, Office of the Vice President, Physical Planning and Construction, Facilities Manual, Part 6 Capital Improvement Program, April 1969.

Descriptive oucline of project planning guide for proposing new facilities to qualify for state capital funding. Gives procedure for translating academic programs and enrollment projections into facility requirements using standards for weekly student hours, student station sizes, and utilization.

Wisconsin Coordinating Council for Higher Education, 1969-71 Coordinating Council for Higher Education Building Priorities, CCHE #154, Madison, Wis., Dec. 1968.

Includes two state systems of higher education: University of Wisconsin with four campuses, and Wisconsin State University with nine campuses. For each campus there is an inventory summary, enrollment forecast, and estimate of new facilities needed by 1972 using standards and factors for planning.

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